



The first micropterous species of the southern European genus *Kakothrips* (Thysanoptera: Thripidae)

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A new species of the European genus *Kakothrips* Williams is described from micropterous adults of both sexes, collected from *Vicia* spp. at a mountain site in northwest Italy. The new species represents the first record of microptera in this genus.

Key words: *Kakothrips*, macropterous species, flower-living species, Fabaceae

The European genus *Kakothrips* Williams includes seven species (ThripsWiki 2015) that are known to be flower-living mainly on Fabaceae plants. The genus is recorded across Europe from Morocco to England, and eastwards to Syria and Iran (zur Strassen 2003). Only *K. pisivorus* (Westwood) is known from northern Europe, and this is the senior synonym of the type species *K. robustus* (Uzel) (Collins 2010). Closely related to *Frankliniella*, the species share with the members of that genus the character states of ctenidia present on tergite VIII anterolateral to the spiracles, and a complete row of setae on both longitudinal veins of the fore wing. Also, the pronotal anteromarginal and anteroangular setae are half as long as the posteroangular setae. The character states of the genus *Kakothrips* include: ocellar setae pair III arising between posterior ocelli; fore tarsus with an apical tooth, laterally; pronotal posterior margin without a pair of small setae between the major posteromarginal setae. In some of the species the males bear a pair of stout tubercles laterally on tergite VIII, and sternites III–VI or III–VII of males have a transverse pore plate. All the described species are known only from macropterae, and they are similar to each other in structure. A few distinguishing characters include colour of body, fore wings and antennal segments; the shape, length and position of the fore tarsal tooth; size of body, antennal segments, and major setae; and in males, shape of sternal pore plates, and length of setae on tergite IX.

In the present contribution, the first known micropterous species in this genus is described on adults of both sexes. These were collected in a small mountainous area of Piedmont Apennines (about 1400 m above sea level), called Valle di Borbera, in Alessandria province, northwest Italy. As indicated below under examined specimens, micropterous adults of both sexes of the new species (Figs 1–2) have been collected in the first half of May for several years, from flowers of *Vicia* sp. These repetitive surveys over several years suggest that this species is univoltine. This discovery represents the first micropterous species belonging to the genus *Kakothrips*. There are four other species of this genus in southern Europe: *acanthus* Berzosa from Spain and Sicily, *firmoides* Priesner and *priesnerorum* Bournier from South France, and *pisivorus* (Westwood) widely spread in Europe. The other three known *Kakothrips* species are: *dentatus* Knechtel from eastern Europe, *dolosus* Berzosa from Morocco, and *priesneri* Pelikan from Israel.

Kakothrips borberae sp.n.

Female microptera. Body colour brown, fore tibiae yellowish, tarsi yellow; antennal segments I–II brown, III yellow or brown-yellow, IV–VIII brown; major body setae dark brown; fore wings clear.

Antennae 8-segmented (Fig. 5); segments III–IV narrowed distally, with one forked sense cone, segments V–VI with one sense cone. Head (Fig. 3) wider than long, with weakly transverse linear sculpture; three pairs of ocellar setae present, ocellar pair I just in front of the first ocellus, ocellar setae III between the posterior ocelli; four pairs of postocular setae present, postocular setae III longer than others. Maxillary palps 3-segmented, labial palps 2-segmented. Pronotum (Fig. 3) with weakly transverse striate sculpture, one pair of anteromarginal setae, one pair of anteroangular setae; four pairs of posteromarginal setae, the smallest one between the two outer posteroangulars, discal setae absent. Fore tarsus with a sickle-shaped tooth on its outer side. Mesonotum (Fig. 4) with transverse longitudinal lines of

sculpture. Metanotum (Fig. 4) with transverse irregular lines of sculpture, two pairs of anteromarginal setae equally long; campaniform sensilla absent. Abdominal tergites with a transverse dark thickening marked on tergites IV–VIII, hind margin of tergite VIII with sparse and fine microtrichia. Tergite IX with two pairs of long setae and one pair of dorsal smaller setae.

Measurements (holotype in microns). Body length distended 1490. Pronotum length (width) 200 (217); fore wing length (median width) 120 (66). Antennal segments I–VIII length 21, 37, 46, 43, 31, 41, 10, 13.

Male microptera. Similar to female, but smaller. Tergite IX with one pair of central spurs and behind it, one pair of short spurs, one pair of median long setae; one pair of long lateral setae. Sternites III–VII each with a long and slender rectangular pore plate (Fig. 2). Sternite IX with one pair of thick and sickle-like setae at hind angles.



FIGURES 1–6. *Kakothrips* from southern Europe. *borberae*, 1–5: (1) adult female microptera; (2) adult male microptera; (3) female microptera head and pronotum; (4) mesonotum and metanotum; (5) antenna. (6) *firmoides*, male abdominal sternites IV–VII.

Measurements (paratype in microns). Body length distended 1051. Pronotum length (width) 123 (181). Fore wing length (median width) 82 (40). Antennal segments I–VIII length 19, 30, 39, 36, 26, 33, 7, 10.

Specimens examined. Holotype female: **ITALY**, Alessandria Province, Valle Borbera (Piedmont Apennines) Carrera Ligure, from flowers of *Vicia* sp., 10.v.2006, in the Department of Agriculture, Università Mediterranea di Reggio Calabria.

Paratypes: 1 female with same data as holotype; same place and plant, 2 males, 15.v.2014, and 22.v.2003, in the Department of Agriculture, Università Mediterranea di Reggio Calabria; same place and plant as holotype, 20.v.2009, 15 females, in G. Ravazzi Collection, Novi Ligure (Alessandria).

Comments. Females of this new species can be distinguished from congeneric females in southern Europe by the colour of the third antennal, tibiae and fore tarsus, as in *borberae* these are yellow, fore tibiae yellowish and all tarsi yellow, whereas in *priesnerorum* these character states are all brown or dark brown. In *acanthus* the third antennal is brown-yellowish in the basal half or more, the fore tibiae yellowish or yellow-brown and the fore tarsi yellow. *K.borberae* differs in the chaetotaxy of the pronotum as it lacks any small posteromarginal setae between the major median and posteroangular setae, whereas there are two pairs in *firmoides* and *priesnerorum* and three pairs in *acanthus*. Females of *borberae* and *priesnerorum* show a similar chaetotaxy of tergite IX as they have two pairs of long setae and one dorsal smaller pair, whereas *firmoides* and *acanthus* have three pairs of long setae. Males of *borberae*, *firmoides* and *acanthus* cannot be distinguished by the chaetotaxy of tergite IX, which are very similar and show the two median pairs of spurs and one pair of median dorsal setae, nor by sternite IX with the posterior thick and sickle-like setae. In the males, the shape of the sternal pore plates is probably an important character to distinguish species of *Kakothrips* (Figs 2, 6), when both sexes are available for study. The size and the shape of the tooth on the distal apex of the fore tarsus is considered useful to distinguish species in this genus, when there is a finger-like tooth ventrally at the apex of the second segment as in *K.acanthus* (see Berzosa 1994), or an apical and dorsal sickle-shaped tooth as in *borberae*, *firmoides* and *priesnerorum* species (see Priesner 1932, Bournier 1971). However, these last species can be separated from each other through the character states reported above.

Etymology and acknowledgements

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